

Application Number 10/623,781  
Amendment dated June 22, 2005  
Response to Office Action of March 22, 2005

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A method for ~~reducing surface deformation of~~ operating a gap diode electrodes comprising the steps: ~~of increasing a vapor pressure of a material in a space between said electrodes of said device, thereby~~ and (b) reducing evaporative losses of electrode material from said surface of one or both of said electrodes, whereby surface deformation will be reduced.

Claim 2 (original): The method of claim 1 wherein said material comprises a material that exerts a significant vapor pressure at an operating temperature of said gap diode.

Claim 3 (original): The method of claim 1 wherein said material comprises a metal.

Claim 4 (original): The method of claim 3 wherein said metal is chosen from the group consisting of: Zinc, Lead, Cadmium, Thallium, Bismuth, Tin, Selenium, Lithium, Indium, Sodium, Potassium, Gallium, and Cesium.

Claim 5 (original): The method of claim 3 wherein said metal comprises Cesium.

Claim 6 (original): The method of claim 1 in which one or both of said electrodes comprise said material in solid form, and wherein said step of increasing a vapor pressure comprises the step of increasing an operating temperature of said gap diode to a value at which a vapor pressure of said material is sufficient to prevent said evaporative losses.

Claim 7 (original): The method of claim 6 wherein said material comprises a metal.

Claim 8 (original): The method of claim 7 wherein said metal is chosen from the group consisting of: Zinc, Lead, Cadmium, Thallium, Bismuth, Tin, Selenium, Lithium, Indium, Sodium, Potassium, Gallium, and Cesium.

Claim 9 (original): The method of claim 7 wherein said material comprises Cesium and wherein said step of increasing an operating temperature comprises the step of increasing an operating temperature to a temperature greater than 30° C.

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Claim 10 (original): The method of claim 7 wherein said material comprises Cadmium and wherein said step of increasing an operating temperature comprises the step of increasing an operating temperature to a temperature greater than 350° C.

Claim 11 (original): A method for reducing evaporative losses of electrode material from one or both electrodes of a gap diode device comprising the step of introducing a further material in vapor form into a space between said electrodes, whereby a vapor pressure of said further material reduces said evaporative losses.

Claim 12 (original): The method of claim 11 wherein said material comprises a material that exerts a significant vapor pressure at an operating temperature of said gap diode.

Claim 13 (original): The method of claim 11 wherein said material comprises a metal.

Claim 14 (original): The method of claim 13 wherein said metal is chosen from the group consisting of: Zinc, Lead, Cadmium, Thallium, Bismuth, Tin, Selenium, Lithium, Indium, Sodium, Potassium, Gallium, and Cesium.

Claim 15 (original): The method of claim 13 wherein said metal comprises Cesium.

Claim 16 (original): The method of claim 11 in which one or both of said electrodes comprise said material in solid form, and wherein said step of introducing a further material in vapor form comprises the step of increasing an operating temperature of said gap diode to a value at which a vapor pressure of said material is sufficient to prevent said evaporative losses.

Claim 17 (original): The method of claim 16 wherein said metal is chosen from the group consisting of: Zinc, Lead, Cadmium, Thallium, Bismuth, Tin, Selenium, Lithium, Indium, Sodium, Potassium, Gallium, and Cesium.

Claim 18 (original): The method of claim 16 wherein said material comprises Cesium and wherein said step of increasing an operating temperature comprises the step of increasing an operating temperature to a temperature greater than 30° C.

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Claim 19 (original): The method of claim 16 wherein said material comprises Cadmium and wherein said step of increasing an operating temperature comprises the step of increasing an operating temperature to a temperature greater than 350° C.

Claim 20 (original): The method of claim 1 wherein said gap diode is used for tunnel emission of electrons.

Claim 21 (original): The method of claim 1 wherein said gap diode is used for thermionic emission of electrons.

Claim 22 (original): The method of claim 1 wherein said gap diode is used for field emission of electrons.

Claim 23 (original): The method of claim 11 wherein said gap diode is used for tunnel emission of electrons.

Claim 24 (original): The method of claim 11 wherein said gap diode is used for thermionic emission of electrons.

Claim 25 (original): The method of claim 11 wherein said gap diode is used for field emission of electrons.